

REMARKS

In accordance with the foregoing, claims 17 – 66 are cancelled without prejudice or disclaimer. Claims 1 – 10 and 13 - 16 are pending and under consideration. No new matter is presented in this Amendment.

**Rejection of claims 1, 2, 3, 15 and 16 under 35 U.S.C. §102(b) or, in the alternative, under 35 U.S.C. §103(a) over Moriwaki et al.**

At page 3 of the Office Action, claims 1, 2, 3, 15 and 16 were rejected under 35 U.S.C. §102(b) as being anticipated by or, in the alternative, under 35 U.S.C. §103(a) as obvious over Moriwaki et al. (U.S. Patent 6,258,480) (hereinafter, "Moriwaki"). The Examiner alleged that Moriwaki discloses a battery having a battery case constructed of aluminum or an aluminum alloy and that has a nickel layer deposited on the outside or inside face of the battery case, the thickness of the nickel layer being at least 3 to 5  $\mu\text{m}$  but less than 30  $\mu\text{m}$  and the thickness of the bottom portion of the battery case being 0.5 mm. For the following reasons, this rejection is traversed and reconsideration is requested.

Independent claim 1 relates to a secondary battery comprising an electrode unit having a positive electrode plate, a negative electrode plate and a separator disposed therebetween, a can having a bottom portion and in which the electrode unit and an electrolytic solution are accommodated and sealed, the can comprising aluminum or an aluminum alloy; and a layer provided on at least an outer surface of the bottom portion of the can wherein the layer has a thickness of 30  $\mu\text{m}$  to 100  $\mu\text{m}$ .

Moriwaki, on the other hand, describes a battery having a metal case constructed of aluminum and having a nickel layer having a thickness less than 30  $\mu\text{m}$  on at least the inside face or the outside face of the metal case. The requirement of a thickness of the nickel layer of less than 30  $\mu\text{m}$  is repeated throughout Moriwaki, including claims 4 and 16 of Moriwaki. Moreover, in view of the repeated teachings in Moriwaki that its nickel layer is less than 30  $\mu\text{m}$ , there is no basis for the allegation by the Examiner at page 9 of the Office Action that the phrase "up to 30  $\mu\text{m}$ " used at col. 11, line 55 of Moriwaki includes 30  $\mu\text{m}$ . Moreover, in view of the repeated mentions in Moriwaki that its nickel layer is less than 30  $\mu\text{m}$ , a person skilled in the art would not be motivated by the statement at col. 11, line 56 - 58 that an outside layer of nickel improves a strength of lead connections to provide a nickel layer having a thickness of 30  $\mu\text{m}$  to 100  $\mu\text{m}$ . In particular, Moriwaki at col. 5, lines 18 – 21 explicitly states that a nickel layer under 30  $\mu\text{m}$  provides the lead connection strength. Therefore, Moriwaki does not disclose a layer on an

outer surface of the bottom portion of the can having a thickness of 30  $\mu\text{m}$  to 100  $\mu\text{m}$  and does not provide any motivation for a person skilled in the art to have provided a nickel layer of 30  $\mu\text{m}$  or greater.

Therefore, the rejection should be withdrawn.

**Rejection of claims 4 and 5 under 35 U.S.C. §103 over Moriwaki et al. in view of Seiji**

At page 4 of the Office Action, claims 4 and 5 were rejected under 35 U.S.C. §103(a) as being unpatentable over Moriwaki as applied to claim 1 above, and further in view of Seiji (JP 60 124351). The Examiner alleged that Seiji discloses a nonaqueous electrolyte cell having a copper layer on the outside surface of the positive electrode enclosure and teaches that the use of nickel or copper on the outside surface of the terminal face reduces the contact resistance. The Examiner alleged that it would have been obvious to use copper on the outside surface of the battery case to reduce contact resistance. For the following reasons, this rejection is traversed and reconsideration is requested.

As noted above, Moriwaki does not teach or suggest a layer on an outer surface of the bottom portion of a can of a secondary battery having a thickness of 30  $\mu\text{m}$  to 100  $\mu\text{m}$  as recited in independent claim 1, from which claims 4 and 5 depend. Seiji does not teach or suggest any thickness of its nickel or copper layer. Therefore, combining the secondary battery of Moriwaki with a copper layer according to Seiji would not have met all of the limitations of the present claims. Therefore, the rejection should be withdrawn.

**Rejection of claims 6 and 7 under 35 U.S.C. §103 over Moriwaki et al. in view of Morishita et al.**

At page 5 of the Office Action, claims 6 and 7 were rejected under 35 U.S.C. §103(a) as being unpatentable over Moriwaki as applied to claim 1 above, and further in view of Morishita et al. (U.S. Patent 5,976,729) (hereinafter, "Morishita"). The Examiner acknowledged that Moriwaki does not teach the connection of a safety device to a cell by way of welding. The Examiner alleged that Morishita discloses a cell with a reliable protective circuit or safety device and that the bottom surface of the battery can is welded to a first lead plate, which may be nickel or nickel alloy, and that the first lead plate is welded via resistance welding to a second lead plate for connection to the battery such that the protective circuit or safety device is connected to the battery. The Examiner took the position that it would have been obvious to connect the safety

device to the cell via a welding method to ensure proper protection of the cell during abnormal operation. For the following reasons, this rejection is traversed and reconsideration is requested.

As noted above, Moriwaki does not teach or suggest a layer on an outer surface of the bottom portion of a can of a secondary battery having a thickness of 30  $\mu\text{m}$  to 100  $\mu\text{m}$  as recited in independent claim 1, from which claims 6 and 7 depend. Moreover, Morishita does not describe any layer on an outer surface of the bottom portion of a can of a secondary battery but only describes that a lead plate is welded onto the bottom of a can. Therefore, the combination of Moriwaki and Morishita would not have taught all of the limitations of the present claims. Therefore, the rejection should be withdrawn.

**Rejection of claims 8 and 9 under 35 U.S.C. §103 over Moriwaki et al. in view of Morishita et al and further in view of Seiji**

At page 6 of the Office Action, claims 8 and 9 were rejected under 35 U.S.C. §103(a) as being unpatentable over Moriwaki in view of Morishita as applied to claim 6 above, and further in view of Seiji. The Examiner alleged that Morishita discloses that a two-layer lead is attached to the bottom surface of the battery and that the first layer of the lead is aluminum or an aluminum alloy and the second layer is nickel or a nickel-plated stainless or nickel plated copper. The Examiner acknowledged that the combination of Moriwaki and Morishita does not teach an outside layer comprised of a first material and a lead connected thereto comprised of a second material having a melting point different from the layer material by 500  $^{\circ}\text{C}$  or less or by 200  $^{\circ}\text{C}$  or less. The Examiner alleged that Seiji teaches a nonaqueous electrolyte cell having a copper layer on the outside surface of the positive electrode enclosure or can and teaches that the use of nickel or copper on the outside surface of the terminal face reduces the contact resistance. The Examiner alleged that a lead constructed of a copper-nickel alloy has a melting point of 1170  $^{\circ}\text{C}$  and that the copper outside layer of the battery can has a melting point of 1083  $^{\circ}\text{C}$ , a difference of less than 200  $^{\circ}\text{C}$ . The Examiner took the position that it would have been obvious to modify the battery can outside layer of Moriwaki to use copper in the construction of the battery can as taught by Seiji to reduce the contact resistance. For the following reasons, this rejection is traversed and reconsideration is requested.

As noted above, Morishita, Moriwaki and Seiji, singly or combined, do not teach or suggest a layer on an outer surface of the bottom portion of a can of a secondary battery having a thickness of 30  $\mu\text{m}$  to 100  $\mu\text{m}$  as recited in independent claim 1, from which claims 8 and 9

depend. Therefore, the rejection should be withdrawn.

**Rejection of claim 10 under 35 U.S.C. §103 over Moriwaki et al. in view of Seiji and further in view of Morishita et al.**

At page 7 of the Office Action, claim 10 was rejected under 35 U.S.C. §103(a) as being unpatentable over Moriwaki in view Seiji, as applied to claim 4 above, and further in view of Morishita. The Examiner acknowledged that Moriwaki and Seiji do not teach a lead unit connected to a safety device. The Examiner alleged that Morishita discloses a cell with a reliable protective circuit or safety device having leads connecting the battery and the associated protective circuit or safety device. The Examiner alleged that it is well known in the art that soldering is a common technique used to join two metals. The Examiner took the position that it is well known to modify Moriwaki and Seiji to include an electrically connected safety device to the battery for cell protection as allegedly taught by Morishita. For the following reasons, this rejection is traversed and reconsideration is requested.

As noted above, Morishita, Moriwaki and Seiji, singly or combined, do not teach or suggest a layer on an outer surface of the bottom portion of a can of a secondary battery having a thickness of 30  $\mu\text{m}$  to 100  $\mu\text{m}$  as recited by claim 1, from which claim 10 depends. Therefore, the rejection should be withdrawn.

**Rejection of claims 13 and 14 under 35 U.S.C. §103 over Moriwaki et al. in view of Shibata et al.**

Also at page 7 of the Office Action, claims 13 and 14 were rejected under 35 U.S.C. §103(a) as being unpatentable over Moriwaki as applied to claim 1 above, and further in view of Shibata et al. (EP 0 899 799 A2) (hereinafter, "Shibata"). The Examiner alleged that Shibata discloses that the bottom surface of a jar can of a secondary battery consists of multiple layers in which the battery can bottom surface is aluminum or aluminum alloy, the layer adjacent to the exterior of the bottom of the can is iron or a ferrous alloy and that the layer adjacent to the exterior surface of the iron layer is nickel. The Examiner took the position that it would have been obvious to use iron as an internal layer of the bottom of the battery can to ensure the structural strength of the can. For the following reasons, this rejection is traversed and reconsideration is requested.

As noted above, Moriwaki does not teach or suggest a layer on an outer surface of the bottom portion of a can of a secondary battery having a thickness of 30  $\mu\text{m}$  to 100  $\mu\text{m}$ , as recited in claim 1, from which claims 13 and 14 depend. Moreover, Shibata explicitly states that its nickel layer is not more than 5  $\mu\text{m}$ . Therefore, providing the secondary battery of Moriwaki with a multilayer structure according to Shibata would not have taught all of the limitations of the present claims. Therefore, the rejection should be withdrawn.

**CONCLUSION:**

There being no further outstanding objections or rejections, it is submitted that the application is in condition for allowance. An early action to that effect is courteously solicited.

Finally, if there are any formal matters remaining after this response, the Examiner is requested to telephone the undersigned to attend to these matters.

If there are any additional fees associated with filing of this Amendment, please charge the same to our Deposit Account No. 503333.

Respectfully submitted,

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